

Application No. 10/775,519  
Response and Amendment dated December 30, 2005  
Reply to Office Action of November 1, 2005  
Docket Number 18525/04071

### REMARKS

Claims 1-6 and 21-22 are pending in this application. Claims 2 and 21 are objected to, and claims 1-6 and 21-22 are rejected. Claims 1 and 2 are hereby amended and claim 21 is hereby cancelled. The amendments do not constitute new matter. In view of the above-described amendments and following remarks, reconsideration of claims 1-6 and 22 is respectfully requested.

#### Claim Objections

The Examiner objected to claim 2 because of incorrect punctuation. Claim 2 has been accordingly amended. The Examiner also objected to claim 21 under 37 C.F.R. 1.75(c) for failing to further limit the subject matter of a previous claim. Claim 21 is hereby cancelled, rendering this objection moot.

#### Section 112 Rejections

The Examiner has rejected claims 1-6, 21, and 22 under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the applicant regards as the invention.

With regard to claim 1, line 5, the Examiner has stated that it is not understood what constitutes the "means for determining the particle sizes of the materials comprising said layers". The Examiner has also stated that it is not understood what constitutes the "means for determining the fluid retention properties of said layers based on said particle size" (claim 1, lines 6-7). In response to the Examiner's comments, lines 5-7 of claim 1 have been amended to recite "means for extracting a sample of said layered soil profile in order to determine the particle sizes of the materials comprising said layers and the fluid retention properties of said layers based on said particle size." Applicant contends that there is adequate support in the disclosure to specify means for extracting a sample of the layered soil profile, for the purposes of determining particle size and fluid retention properties. At page 6, lines 16-22, the specification provides:

For analyzing a root zone / sand layer type soil profile, *a soil-coring tool is used to withdraw a sample of the profile* and visually inspect it to ensure that the soil is appropriately layered and that the root zone material is sandy throughout. A small

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sample of the root zone is removed from the coring tool for closer visual examination to ensure that the particles fall within an expected size range. The water retention properties of the root zone are inferred using basic soil physics principles (see Example 1), and from visual inspection of the particle sizes (emphasis added).

Thus, this portion of the specification clearly discloses a soil coring tool to be used as a means for withdrawing a sample of the soil profile. The withdrawal of the sample, using the coring tool, provides for the ability to determine the particle size of the materials comprising the layers and their fluid retention properties, as set forth in claim 1. Accordingly, it is believed that the amendment to lines 5-7 of claim 1 overcomes the Examiner's rejections.

With regard to claim 1, lines 12-13, the Examiner has stated that it is not understood what constitutes the "means for inserting said drainage members into said layered soil profile at substantially regular intervals to form an array".

On this point, the Applicant respectfully disagrees. Page 12, lines 13-33 and page 14, lines 1-13 of the specification provide adequate disclosure for the recited "means for inserting said drainage members into said layered soil profile at substantially regular intervals to form an array". This portion of the specification addresses the insertion of both circular drainage members, as in the instance of fiberglass rope, and insertion of rectangular cross-section drainage members, as in the instance of fiberglass tape. With regard to installation of circular drainage members, this portion of the specification provides that it is necessary to provide a pilot hole for insertion of the member. In order to create the pilot hole, page 12, lines 19-20 provide that "it is desirable to employ a *solid, pointed tip, circular diameter tine* to create the pilot hole". Lines 21-22 go on to provide that a "*mechanical actuator such as a hydraulic ram*" is then used to drive the tine vertically into the soil and remove it, leaving the pilot hole. To actually insert the capillary drain, lines 23-25 indicate that some stiffening support may be required. Line 24 specifically recites that an adequate means for providing such support may be in the form of "*a small diameter wire, plastic or wooden dowel*" inserted into the center of the pilot hole which is positioned along the vertical axis of the circular drainage member.

Lines 29-30 of page 12 indicate that in the case of a rectangular cross-section drainage member, creation of a pilot hole is not necessary. In this instance, the means for inserting the drainage member is disclosed as "*a thin but reinforced metal plate*" (page 12, lines 31-32). The

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drainage member, in the form of fiberglass tape, is laid flat over the surface of the soil and driven into the soil by the metal plate, protected by a narrow protective band in its center. A mechanical actuator is used to insert the capillary drain by driving the plate downward (page 13, lines 1-7).

While it is believed that the specification provides, on its face, adequate disclosure for the recited "means for inserting said drainage members", the Examiner has mentioned two specific concerns. In the Office Action dated November 1, 2005, Examiner specifically asked, "Is the flexible capillary drain or fiberglass rope inserted by hand once the pilot hole is drilled?" As stated above, such a circular capillary drain is inserted into the pilot hole by means of a "small diameter wire, plastic or wooden dowel." Clearly, some downward force must be applied to the wire or dowel in order to insert the drainage member. The specification indicates that the entirety of the installation methods described in the specification may be performed by mechanical actuation, which would include insertion of the drainage member following creation of the pilot hole. Lines 10-12 of page 13 provide for "mechanization of the insertion process so that a single operator of a *"small, motorized unit"* could conduct the installation process.

On a related note, the Examiner also indicated that such mechanical actuators, as mentioned in the specification, are not described with sufficient particularity. MPEP §2181, provides in relevant part, that "disclosure of structure corresponding to a means-plus-function limitation may be implicit in the written description if it would have been clear to those skilled in the art what structure must perform the function recited in the means-plus-function limitation." *See Atmel Corp. v. Information Storage Devices Inc.*, 198 F.3d 1374, 1379, 53 USPQ2d 1225, 1228 (Fed. Cir. 1999). Such motorized systems or units are well-known to those skilled in the art. Thus, Applicant contends that there is adequate disclosure in the written description to support the claimed "means for inserting said drainage members" of claim 1. Accordingly, it is believed that claim 1, as amended, and its dependent claims, overcome the Section 112 rejections.

#### Section 103 Rejections

1. Claims 1, 3-6, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamashita, et al. (U.S. Patent No. 4,451,175) (hereinafter "Yamashita") in view of Applicant's admitted prior art on page 6, lines 27-29 of the specification.

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As provided by MPEP §2143.03, to establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. The Examiner has indicated that claim 2 would be allowable, if rewritten to overcome the Section 112 rejections and claim objection, because Yamashita does not disclose a first layer of a soil profile comprising a sandy root zone and a second layer comprising a gravel layer.

However, Yamashita, even when combined with Applicant's admitted prior art, still does not provide all the limitations of claim 1, as amended. Yamashita does not disclose "means for extracting a sample of said layered soil profile in order to determine the particle sizes of the materials comprising said layers and the fluid retention properties of said layers based on said particle size." There is no teaching or suggestion in Yamashita that sampling the soil profile would be desirable, as Yamashita is not concerned whatsoever with particle size of the soil. As mentioned in Applicant's prior Amendment to this application dated December 22, 2004, the pore sizes of the sand drain do not match the particle size of the soil in the Yamashita system. As a result, Yamashita is an active drainage system, in that a load must be applied to the soil for drainage to occur. The system of the claimed invention allows for passive drainage precisely because the particle sizes of the soil are determined, via sampling of the soil, and the drainage members have a distribution of pore sizes compatible with the particle sizes, such that capillary action provides for the drainage of fluid. Thus, Yamashita does not disclose any means for sampling the soil profile, because there would be no purpose in doing so, given the active nature of the drainage system.

Accordingly, Applicant believes that claim 1, as amended, and its dependent claims, overcome the §103 rejection, because all the claim limitations are not disclosed in the prior art cited by the Examiner.

2. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamashita in view of Applicant's admitted prior art on page 6, lines 27-29 of the specification and further in view of Plowman et al. (U.S. Patent No. 5,458,436).

As stated above, claim 21 is hereby cancelled and thus this ground of rejection is rendered moot.

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Applicant respectfully submits that claims 1-6 and 22 are in condition for allowance.  
Prompt notice of such allowance is respectfully requested.

No additional fees are believed due in connection with this response. However, in the event additional fees or extensions are required, the Examiner is authorized to treat this letter as a request for further extensions and to charge Deposit Account No. 03-0172.

Respectfully submitted,

Date:

12/30/05

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